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**TWO FACES OF TRUST:
THE ROLES OF CALCULATIVE AND RELATIONAL TRUST
IN WORK TRANSFORMATION**

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WP #3923-96

SEPTEMBER 1996

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An earlier version of this paper was presented at the annual meeting of the Academy of Management, in the Organization and Management Theory (OMT) Division, Dallas, TX, August 1994; and at the MIT Sloan School Industrial Relations Research Seminar, April 1994.

We would like to thank the Leaders for Manufacturing Program for facilitating field work and funding this study. We are grateful to all the people who participated in this study for sharing their insights with us. We thank Mauro Guillen, Thomas Kochan, Richard Locke, William Ocasio, Paul Osterman, James Rebitzer, and Tom Tyler for valuable comments on earlier versions of this work.

Under review at Organization Science

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Abstract

There is a paradox of workplace transformation: It generates trust but first requires trust. New approaches, such as teamwork and pay-for-skills, remain stuck if employees do not trust them enough to participate. We study which employees take courses when a pay-for-skills plan is created in a company but uncertainty remains about the promised rewards. Employees' willingness to take courses affects multi-skilling and teamwork, at the heart of work transformation. This study pursues a calculative versus a relational notion of trust, to distinguish the role of trust in jump-starting and sustaining transformation. We design a survey, based on extensive observation and interviews, to examine the dynamics of trust in a manufacturing setting; our findings are based on responses from 191 employees on 22 teams, which are either not yet transformed or partly transformed. We find that an initial group of employees working in the traditional context of narrow, individualized tasks will take a course if they can calculate an individual probability of gain. In contexts where some of the simpler forms of transformation are offered, such as job rotation, team meetings, and information sharing, the importance of interdependency becomes more salient. Employees in these contexts take courses, not from expected personal gain, but based on their relational trust in teammates. We conclude with a discussion of the prospects for transformation, which may be promising if the paradox can be resolved by the incremental generation of trust, but may warrant caution if some team members continue to withhold participation.

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Introduction

A paradox of workplace transformation is that trust is a beneficial, self-reinforcing outcome, but first trust is required for transformation to get underway. The prospects for transformation sometimes appear too dismal because trust can be observed but not created (Sabel 1992). Distrustful employees will not seize opportunities for involvement, but a state of trust cannot easily be forced or cajoled into being. We explore this apparent paradox by drawing on two types of trust that can be distilled from diverse literatures – calculative and relational – and demonstrate that each plays a distinct role in work transformation. We show that calculative trust plays a role before transformation is underway so some employees with potential gains will take the risk of involvement, whereas relational trust plays a role where a few of the simpler features of transformation are in place, such as regular team meetings, to create a medium where trustworthiness of others spurs greater involvement. Understood in this multi-faceted way, trust can at once jump-start and sustain transformation.

This paper opens by describing work transformation and identifying trust as one of its levers. We introduce two conceptualizations of trust: calculative and relational. We then present the organizational setting in which our ideas about trust evolved through extensive observation and interviews. This inductive approach provides two advantages. First, in keeping with the idea that relational trust is richly embedded in a context, we learned about its nature and mechanisms in a setting we came to know well in order to ground this sometimes diffuse and poetic concept. Second, our in-depth knowledge of transformation enabled us to identify an appropriate, measurable behavioral outcome for study: participation in courses that are part of a pay-for-skills plan. We then present our grounded hypotheses and empirical findings; the findings from our qualitative data on employees' complex assessments of transformation are presented elsewhere

(Scully and Preuss 1994). We conclude with a discussion of the prospects for continued transformation where some distrust persists.

Transformation

Transformed or flexible work practices include teamwork, job rotation, multi-skilling, cross-training, and pay-for-skills, which together constitute a new way of coordinating, monitoring, and rewarding labor. These new practices have been hailed from various quarters both for their improvements in productivity and quality and for their enrichment of employees' work lives. The spread of transformed work practices across organizations has been documented. The definition of adoption and measures of the extent of diffusion are subjects of debate and refinement (Appelbaum and Batt 1994, Bailey and Merritt 1992, Cutcher-Gershenfeld 1991, Osterman 1994).

Even when organizations adopt transformed practices, internal diffusion is intermittent (Osterman 1994). While human resource professionals may aver their company's use of flexible practices on a survey, the presence of structures does not determine employee participation in the new practices, particularly because these practices rely upon employees' willing contribution of effort and involvement in a team setting (e.g., Donnellon 1996). Individuals must adopt new behaviors, responsibilities, and relationships for the new practices to deliver on their promises. Trust is cast in a supporting role in the development of empowered, self-directed teams (Golembiewski and McConkie 1975, Larson and LaFasto 1989). Ideas about trust are also evoked to explain why these new practices, like quality circles in previous decades (Cole 1989), diffuse slowly and are difficult to sustain, despite their great promise.

In particular, engaging in training and participating in transformed work practices appear to require some form of trust from employees. From an employee's perspective, the time horizon is long in many pay-for-skills plans, from investing in skills to realizing an increase in pay and status. An employee's trust in new reward systems requires trust that the pay-for-skills plan will continue to exist, even though pay plans are known to change frequently, and that the eventual exchange of their skills for more pay will be made good. This paper looks inside an organization

to learn which employees choose to become involved in training, an action that is encouraged by increasingly popular pay-for-skills incentive plans (e.g., Lawler and Ledford 1987) and is a crucial foundation of job rotation, multi-skilling, and teamwork. Training is designed to develop new employee skills, enabling employees' participation as full members in team operations and creating the means for transformed workplaces to achieve their predicted performance outcomes. The study of which employees engage voluntarily in training is an excellent window into understanding the halting diffusion of transformed practices inside organizations.

The transformed workplace also requires greater trust of employees on the part of their supervisors. Transformed practices involve voluntary effort and limited monitoring, conditions where trust in mutual gains is thought to be the bulwark against opportunism. Top-down trust and the conditions that encourage it, particularly during crises or uncertainty, have been well characterized in the literature (e.g., Mayer, Davis, and Schoorman 1995). The literature on incentive alignments also addresses trust from a top-down perspective, sometimes implicitly as a problematic residual that indicates the vulnerability of principals to the actions of agents when trust must substitute for clear alignment.

The prospects for transformation depend not only on whether supervisors' levels of trust allow them to share decision-making but also on whether employees trust the entire change project and the required departures from familiar if problematic modes of operating. Transformation is designed to motivate participation from employees, who may be reluctant to trust the new work practices and reward systems or the managers who champion them, especially if they have long labored under a more authoritarian set of rules. We focus on bottom-up trust as a lynchpin of transformation.

Calculative Trust

The decision to get involved in new work practices requires a weighing of the potential gains and losses under conditions of uncertainty, with the possibility of regret either from trusting too much (and not being rewarded) or trusting too little (and not giving a chance to new practices that promise deliverance for struggling companies and a share of personal rewards). This type of

rational calculation under uncertainty is at the heart of Coleman's (1990) description of individuals' decisions to trust. In Coleman's (1990:99) formulation, "A rational actor will place trust ... if the ratio of the chance of gain to the chance of loss is greater than the ratio of the amount of the potential loss to the amount of the potential gain." We call this first face of trust, "calculative trust," a distinction also advanced by Tyler and Degoey (1996).

This kind of trust can sound like little more than a problem of understanding how employees react to new incentives under conditions of uncertainty, rendering trust a superfluous concept. Mayer, Davis, and Schoorman (1995) distinguish trust from related concepts like confidence and predictability and argue there is a distinctive space for the trust concept. Recent work advanced at the nexus of sociology and economics has tried to make the instrumental face of trust less atomistic and more grounded in a social context. While these broader conceptions of trust incorporate interpersonal relations, the mechanisms remain based on individual, calculated interests. While the interests integrated into the calculation may evolve to include concern for another's well-being and participation, the self-interested basis for behavior remains fully intact. Thus, there is not only room for a concept of trust, but there is room for a conceptually distinct calculative aspect of trust.

Relational Trust

A second notion of trust may capture more richly what is regarded as required and characteristic of successfully transformed workplaces. In this view, trust has a more social, interpersonal, arational, and embedded character (e.g., Baier 1985, Granovetter 1985, Sabel 1992), in contrast to the more individualistic calculation rendered above. Tyler and Degoey (1996) find that relational trust plays a role distinct from instrumental trust in explaining subordinates' acceptance of authority. Their distinctions add refined mechanisms to theories of procedural justice.

Following Granovetter's (1985) notion of social embeddedness, the relational style of trust is neither as strong as blind loyalty and "the confident expectation of something" (Fox 1974:66), nor as fragile as the bonds of self-interested opportunism. These polar states may reflect the

irrelevance or absence of trust (e.g., Fox 1974), or in Granovetter's terms, the oversocialized or undersocialized conception of social behavior. Trust is most rich and interesting in the intermediate cases of social relations, where actors are autonomous and embedded in social relations. Because an adequate treatment of relational trust relies so much upon context to escape from generalities, we reserve a fuller discussion for our presentation of the setting of our study below.

Trust and Transformation

The ideal typical portrait of the transformed workplace includes leaders who trust team members to pursue agreed upon objectives appropriately and team members who trust each other to work hard toward common goals in the pursuit of group rewards. Linkages among tasks, job rotation, and shared team objectives all have the potential to enhance trust by highlighting interaction and interdependency, but they do so best once the transformation process is underway.

Understanding how the first moves toward trusting are made remains an interesting theoretical and empirical question. In this paper, we suggest that the first face of trust – calculative trust – may offer some understanding of how the first movers decide to take courses on teams that are just on the brink of beginning the transformation process and still have hallmarks of a more traditional workplace. The traditional American firm, depicted by Aoki (1988), is characterized by vertical communication, identification with a specific task assignment, and little interdependence in task accomplishment among employees. Teams created within this context cannot yet rely on an experiential understanding of interdependence to spur course-taking. Rather, individual incentives must be offered, as a shadow of the old system, to move into a new mode of relations

The concept of relational trust captures the multiple, simultaneous dimensions of trust during work transformation: employees' trusting leaders to act for the good of the team, leaders and team members' sharing decision-making and blurring authority lines, employees' trusting each other to contribute a share of work where there is less monitoring, team members' relying on one another even when the exchanges involved in job rotation remain vague, and individuals' believing in the efficacy of acting on behalf of the team. Sabel (1992) argues that, in this type of setting, group members learn to imagine others acting in a trustworthy manner. They develop a "reflexive

self” that knows its own trustworthiness and extrapolates from that the trustworthiness of others. In the process of working with and sharing norms with others, group members become willing to display trusting behaviors in increasing understanding of the nature of reciprocity. People trust because they can imagine others trusting them and others acting in a trustworthy manner.

The concrete social context of a transformed workplace alters the daily cues team members receive and raises the saliency of relational factors; this context can affect decision making, attitudes, and perceptions (Salancik and Pfeffer 1978). A team name and a team meeting may create team identity in the most simple way; experiments show that even ad hoc group boundaries and minimal communication among strangers dramatically increase group oriented behavior (e.g., Brewer and Kramer 1986, Dawes, van de Kragt and Orbell 1990). The everyday language of transformed workplaces stresses the importance of group activity and mutual responsibility. Employees discuss and negotiate changes in production with each other (Adler 1992). Production charts track group performance. Group-oriented behavior may become self-reinforcing.

It is important not to lose a place for employees’ cynicism and savvy skepticism amidst this portrait of burgeoning relational trust. The transformation process is often governed by two competing languages or logics: job enrichment on the one hand and increased productivity and competitiveness on the other hand. Employees can often see both the potential benefits and threats to the nature and pace of their work and to their very jobs and livelihoods posed by transformation (Scully and Preuss 1994). We do not posit that employees will uniformly hold a low or high degree of either kind of trust as transformation proceeds. Rather, employees’ circumstances shape different types and degrees of trust, which are in turn consequential for the transformation process. We use types of trust to distinguish employees who evince behaviors consonant with transformation from those who do not. While the antecedents of trust have been the focus of other work (e.g., Mayer, Davis and Schoorman 1995), we add to work on the outcomes. Moreover, by examining whether there is a role for relational trust distinct from calculative trust, we acknowledge that even cynical employees do not simply ask, “what’s in it for me?”

Calculative and Relational Trust Together

We argue that the calculative and relational faces of trust are each relevant, but in two different moments or settings in the transformation process. Our approach differs from the tendency to lobby for one view and critique the other. The calculative face of trust is often dismissed by critics as so cold and deliberate that it does not even represent trust (Fox 1974). However, we wish to retain from the calculative depiction of trust the idea that first-mover individuals on teams must have some notion that they stand to gain in order to make their risky, sometimes solo move. The relational face of trust is often dismissed as too imprecisely specified, too reliant on a description of what it is not, and too distantly idealistic. Relational trust is embedded in a social context and therefore we have defined it in relationship to the specifics of transformation. We do not simply fiat relational trust, but pose a specific dynamic whereby it might emerge: As a team begins to adopt transformed practices, the social context, the mode of working, and the notion of group membership and interdependence change. It is in this changed and changing context that a more relational kind of trust becomes important for encouraging course-taking. In addition, we probe how calculative trust is not devoid of context either, by examining its role particularly in the context of traditional teams that operate in more authoritarian and individualistic modes.

The Social Context of Trust

The hypotheses in this paper were crafted inductively, bringing the theories reviewed above into critical contact with the observations and interview data we gathered during the qualitative phase of our research project. Therefore, before introducing the hypotheses, we describe briefly the research site, our identification of course-taking as an important dependent variable, and the two types of team social contexts we observed. Our approach to the two faces of trust in the literature developed as we observed these two types of teams, enabling us to think more richly about the different social contexts in which different trust mechanisms should operate.

In this study, we focus on three plants of a single company, involved in chemical

production. We focus on the shop floor, which involves the flexible manufacturing of up to sixty products on one line. The company is not unionized; uncertainty in the pay-for-skills plan is not reduced by a collectively bargained contract. This company was an appropriate setting for this study because of the early stage of its transformation process and the nature of its pay-for-skills and training programs. We identified this company during a workshop in which representatives from twelve manufacturing companies shared their experiences of making the transition to transformed work practices. The transformation of work practices was just underway but far from complete at the company we chose to study. Thus there was variance among employees in whether or not they were involved in course-taking. The formal announcement of the move to transformation occurred in early 1991. A pay-for-skills plan was created for each job to define which courses were required to move into that position.

We spent two years in this company (1991-92), beginning with group discussions with team leaders and observations of team meetings and of production. We conducted forty-five semi-structured, one-hour interviews, from which we learned about differences among teams and employees' varied reasons for taking courses and from which we designed questions for a survey. The qualitative data informed our refinement of hypotheses and measures. We designed a survey, discussed below, that we administered in early 1993. By that time, employees had had time to understand the pay-for-skills plan and to begin taking courses, but at the same time, the program had not yet been legitimated nor routinized to the point where all employees took courses.

Discoveries and Design

Our discoveries from the qualitative phase pointed us toward two features that were significant for theory development and survey design. First, we saw the importance of course-taking as a tangible behavioral indicator of getting involved under conditions of uncertainty. Second, we saw that there were two distinct kinds of teams involved in pay-for-skills plans, which posed different contexts in which the dynamics of trust played out. We discuss these features and then present hypotheses.

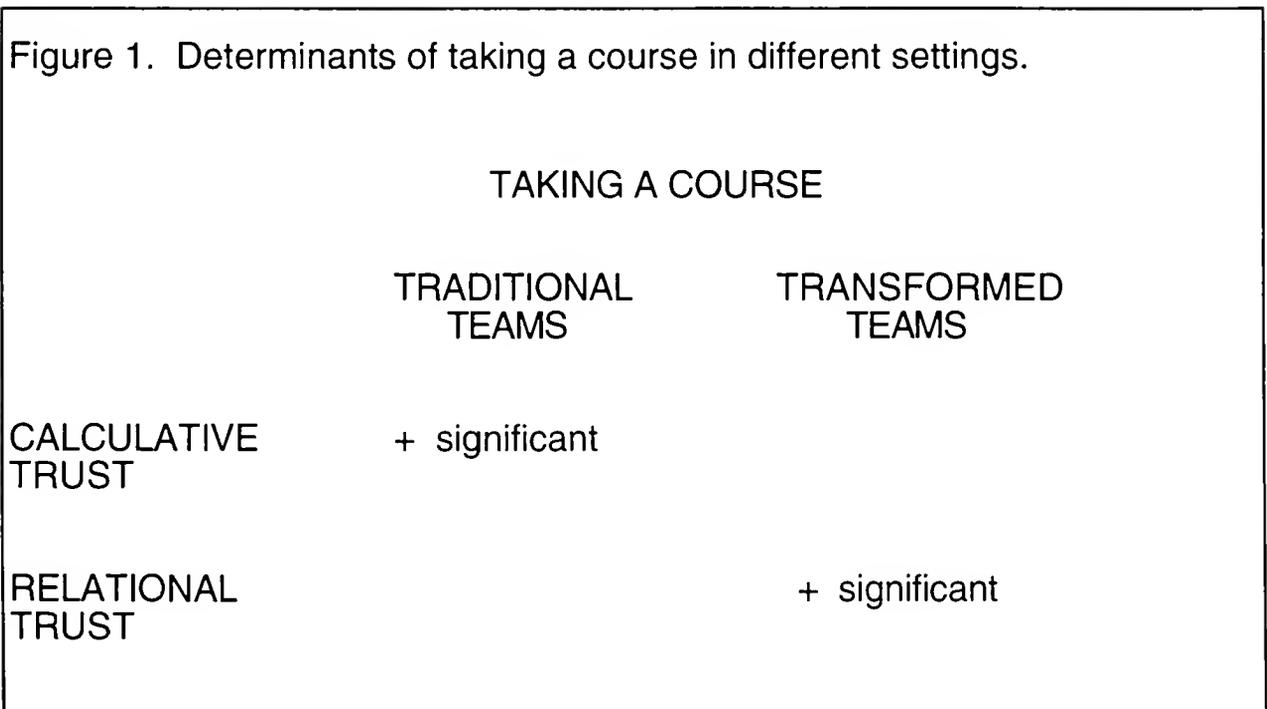
Taking Courses. The dependent variable in this study is whether or not an employee has taken a course. Designers of pay-for-skills plans try to maximize the credibility of the promised exchange of skills and pay. If there were perfect and enforceable guarantees, trust would be irrelevant. When a new incentive plan is announced, employees have no specific information or trail of experiences to shape the usual informal understandings of whether promises of rewards can be believed (Jackall 1988; Scully 1993). Pay-for-skills plans involve uncertainty, because skill certification relies on supervisor discretion, and because there is uncertainty about the long time horizon of the plan.

Taking a course is an appropriate action to study in order to learn if types of trust relate to actions taken under conditions of uncertainty. Rumors abound in this company of individuals taking several courses only to have the team leader change the list of courses required for promotion. As one team leader stated, "People are afraid that they will take a course but not be rewarded." In the training program created along with the pay-for-skills plan, course-taking was highly encouraged in official corporate statements. Team leaders had a budget to cover the time and expenses of employee course-taking. Thus, taking a course was not a heroic effort nor a proxy for who had the political savvy to get sponsored. Occasionally course-taking extended into personal time, but in general, courses could be taken during work time; thus, course-taking does not reduce to a measure of who has fewer personal and family obligations. While strongly encouraged, course-taking remained voluntary. Given all these factors, we can treat an individual's taking a course as an indicator of a volitional decision to engage in the new work practices.

Two Team Settings. We observed two types of teams: those that have only just begun the transformation process and still have many hallmarks of traditional, more individualistic work practices and those where transformation is at least partly underway. Within both types of teams, there were employees who did and did not take courses. In the traditional teams, there was a sense that true team production was a long way off and required new skills. Leaders and members were waiting for a more propitious time to try to become a team. In the more transformed teams, both

leaders and members expressed some frustration at the slow progress toward full team production. These teams were proceeding with some of the feasible aspects of team work such as job rotation among obviously related tasks, posting of production charts on the walls of newly designated “team rooms,” and daily or weekly team meetings to encourage information sharing. They were ratcheting themselves into team work.

The hypotheses below posit how calculative trust and relational trust play different roles in traditional and transformed settings. Figure 1 summarizes our predictions schematically. Below we discuss the nature of the variance in the types of trust within each type of team (e.g., why some employees have higher or lower calculative trust in a traditional team setting) as well as why the two types of trust are differently significant (e.g., why calculative trust is the motor of course-taking in traditional teams but the degree of relational trust is not).



Calculative Trust in Traditional Team Settings

Employees who take courses may be those who weigh the potential costs and benefits differently from those who do not take courses. Employees consider the likelihood that course

taking will be rewarded through increases in job level and pay. The potential gains to taking a course are specified in the pay-for-skills plan, in terms of how many and which courses are required to advance a skill level and what pay increases accompany new skill levels. Our observations and interviews suggest that there are potential gains to being first or among the first on any given team to take courses, in terms of attention and recognition. The first people to take courses were praised. We learned that some of the first people to whom we were introduced as newcomers during our first plant tours were the first course takers, not surprisingly chosen as spokespersons for the transformation effort. Later course-takers find themselves in an important but perhaps less appreciated supportive role, like a "second violinist" (Murningham and Conlon 1991).

Potential gains must be weighed with potential losses. The potential losses to taking a course include the burden of time and effort, both work time and any encroachment of studying into personal time. There is a perceived loss if one takes a course and does not advance a skill level, or does not advance immediately. Our observations and interviews also show there is a potential risk of losing face among one's peers. The transformation of work practices, like many changes sponsored from the top down, is greeted by employees with some skepticism, even among those who are willing to get involved but retain a mix of enthusiasm and skepticism (Scully and Preuss 1994). There are social penalties for being seen by co-workers as a management stooge for jumping on board too readily. As one person on a more traditional team expressed it, "The 'team people' are just brown-nosers. It's particularly bad when annual bonuses come out and they [the brown-nosers] get bonuses that belonged to others." During our interviews, several employees used colorfully profane language to describe fellow workers who had gone along with transformation.

These potential gains and losses may at first seem fairly constant across employees, so that everyone nets a similar calculation. Nonetheless, interviewees focused on issues that might influence higher or lower individual assessments of benefits, such as how likely it was that their supervisor would process their requests for a change in level in a reasonable fashion and whether

the requirement that they display a “good team attitude” would be used by supervisors to hold back people they did not like. Employees who were lower in their job ladders were often said to have the most to gain. Senior employees who were sometimes cynical about the transformation rhetoric nonetheless allowed that it was “good for the younger guys” who “aren’t max’d out yet,” giving these people some latitude to get involved for personal benefit without appearing too coopted.

We posit that calculative trust this individual probability assessment should increase the likelihood of taking a course on more traditional teams, where course-takers are in the risk-taking minority and where other social norms and team structures do not yet promote the adoption of new behaviors. Conversely, individual probability assessments should not be significant for employees on more transformed teams, where a less individualistic, more relational view of the trustworthiness of others drives course-taking or abstention.

Hypothesis 1. Greater calculative trust should increase the likelihood of taking a course for employees on more traditional teams, but not on more transformed teams.

Relational Trust in Partly Transformed Team Settings

Employees who take courses once their teams have begun the transformation process operate under different trust dynamics. Stronger relational trust in the team leader and teammates should increase the likelihood of taking a course on these teams. The team leader and teammates become not just other parties in an economic exchange, but are increasingly seen as reciprocally trustworthy parties who take each others’ inputs into the work process seriously. A more trustworthy team leader can be counted on by members to lobby for and undertake what is best for the team in the future, even if this cannot be precisely specified and agreed upon in advance. Employees who have more of this view of their team situation need not rely on a specific probability assessment to guide their course-taking, but will be more likely to take a course out of a sense of trust in the social situation. “The embeddedness argument stresses instead the role of concrete personal relations and structures of such relations in generating trust and discouraging malfeasance.... Continuing economic relations often become overlaid with social content that carries strong expectations of trust and abstention from opportunism” (Granovetter 1985: 312).

The concrete social situation that we observed in transformed teams involved employees' beginning to use the language of teamwork learned in their courses and to engage in team activities. Phrases like "listening skills" gained currency. Moreover, the partly transformed work practices created a context in which this language made sense in a way that it did not when employees returned from classrooms to their still traditional teams. While employees had a ready language for discussing their calculations of probable benefit from course-taking, it was difficult to express relational trust directly in words. Statements about relational trust may seem too personal or even corny. The depiction of relational trust came across more in the discussion of everyday behaviors and work practices.

Tasks become interdependent, communication increases as decision-making is decentralized, and team members accept responsibility for performance outcomes. Including individuals' names on products that were shipped to the next team in the production process was seen less and less as an indicator of punitive control and more as a source of ownership and information; team members on both teams knew that it was acceptable to call each other on production problems.

This relational face of trust, however, should not be relevant in increasing the likelihood of taking a course for employees on more traditional teams, who are not yet embedded in a social context where the practices and language that come from course-taking prevail. Our treatment of relational trust will capture four aspects: members' trust that the leader will do right by the team, members' trust that the team can take over decision-making from the leader, members' trust that others are reliable for help, and personal commitment to working hard for the common good.

Hypothesis 2. Greater relational trust should increase the likelihood of taking a course for employees on more transformed teams, but not on more traditional teams..

Social Influence as a Diffusion Medium

Our approach to relational trust in partly transformed teams relies on reciprocal influence opportunities as an implicit mechanism. To examine this mechanism more directly, we include a

social influence variable to capture the frequency and content of interaction. Group pressure may either inhibit or promote employee course-taking depending on its content. Frequent contact with team members who have shunned course-taking should reduce the likelihood of taking a course. In contrast, frequent contact with team members who have taken a course can create pressure to take a course and pull one's own weight on the team. Employees who have accepted new practices may push others to do so in order to improve the team's skills and performance. This kind of peer pressure on teams has been described by Barker (1993). We also found instances of negative peer pressure, particularly because mutual monitoring is counter-cultural in some subcultures on the shopfloor. The role of social influence must take into account both the medium and the message.

Social influence will be operationalized by taking into account both the frequency of contact in team meetings, where work practices are discussed explicitly, and the proportion of course-takers on the team. Social influence will be highest where many people take courses and meet frequently and lowest where few people take courses and meet frequently. The level of the social influence variable may differ across the two types of team settings; the direction of its relationship to course-taking should be the same.

Hypothesis 3. Greater social influence should relate positively to the likelihood of taking a course on both types of teams.

Method

The setting has already been described. Below, we describe the detailed survey measures that we designed and the data collection and analysis procedures.

Measures

Course-taking. The dependent variable, course-taking, was coded 0 if an employee had taken no courses from 1991 to 1993 and 1 if an employee had taken one or more courses. We relied on employees' self-report of their course-taking. We have no reason to suspect that employees would misrepresent their course-taking. We obtained corporate records indicating which employees had taken corporate-sponsored courses from 1991 to 1993. We also obtained

records of one of the popular on-site courses given just within one plant. Our scan of these records indicates no false negatives (people reporting zero courses when they had taken one). Because employees may have taken a number of other internal courses, we relied on their own reports. Potential false positives (people who indicate they have taken a course when they have not) are less problematic than false negatives for our study, because someone who indicates they have taken a course may just enrolled, which is close to an acceptable measure of being on board with course-taking. Of course, some of our present "non-course-takers" (coded 0) may eventually become course-takers. However, they had not yet responded to the incentives to take a course at the time of the survey. We code any course-taking as a 1; at the time of the survey, most people had taken only about 1 to 3 courses. We do not interpret differences between taking 1 versus 2 versus more courses as meaningful for the buy-in process we are studying. Our discussions suggest that taking 2 or more courses most likely reflects having started earlier, having had an easier time scheduling additional courses, or even differences in reporting (e.g., whether a two-part course counts as 1 or 2 courses); what is most important is that all these are distinctly different from zero courses.

Two types of team setting. We divided the teams into a more traditional group and a more transformed group based on four characteristics that are more present in transformed work settings: practicing job rotation, holding team meetings, raising touchy issues in team meetings, and looking at team displayed production and quality charts. There is no clearly demarcated, objective measure for transformation. These properties, ranging from technical to interpersonal issues, are ones that are touted in the normative portraits of transformation, and moreover, that we observed as important and distinguishing.

These measures were collected by asking team members how frequently they engaged in these behaviors; they responded using a 7-point scale from "several times daily" to "never." We divided the teams based on the relative frequency with which team members performed the above actions. Teams were split at the mean, with those whose members performed these actions with greater than mean frequency classified as "more transformed." After performing this quantitative

classification of the teams, we confirmed that the teams divided as we would have expected based on our long period of qualitative observation and in-depth knowledge of these teams.

Calculative trust. We operationalize calculative trust as the individual probability assessment of the benefits of course-taking by asking people the probabilities (on a scale from 0 to 100, in 10's) that, if they take a course, their team leader will certify: 1) that they have completed training, 2) that they have applied the skill, and 3) that they have a good team attitude. These are the three steps in the certification process that result in designation of a higher skill level and higher pay. The Cronbach's alpha scores for this three-item scale is .90 for the full sample. It is .89 for the more traditional teams and .90 for the more transformed teams. It is important to check that the scales are robust in both subgroups so that any differences in significance levels, of interest in this study, are not attributable to less or more noise in the independent variable.

Relational trust. We measure relational trust by having employees respond to a series of statements about their teams on a 7-point Likert scale (from strongly disagree to strongly agree). Trust in the leader is measured using, "I trust my team leader to make the right decisions for the future of the team." Mutual trust is measured by the employee's evaluation of how well the team is doing in making "decisions a supervisor used to make." Relational trust in teammates is measured using, "If I get into difficulties at work my teammates would try to help me out." Personal commitment, trusting that it is worth exerting for the common good, is measured using an item from a previous survey on commitment and work practices (Lincoln and Kalleberg 1985): "I am willing to work harder than I have to in order to help [this company] succeed." We wanted to include some additional measures from existing surveys, but generally relied on our own knowledge of the setting to create items that were sensible and idiomatic for our population as well as sufficiently generalizable for our distinct conceptualization of relational trust. Because each of these measures captures one of the multiple dimensions of relational trust, we do not collapse them into a single index.

Social influence. We measure group pressure by multiplying team meeting frequency by course-taking intensity on the team. Team meeting frequency is reported by team members and

averaged. Course-taking intensity (the content of information in the team context) is coded 1 if fifty percent or more of the team members have taken one or more courses, otherwise it is coded 0. Thus, teams that meet frequently and encounter others who have predominantly not taken courses have a more strongly negative social influence score.

Demographic and occupational controls. We include four control variables. Position is coded 1 for hourly employees and 0 for salaried employees. Pay-for-skills plans with course-taking requirements were devised for both hourly and salaried employees; salaried employees may be more involved in this management initiative and take more courses. The plant in which scheduling pressures are greatest is coded as 1. Our observations suggested that these pressures may have made course-taking more difficult. Both the other two plants are coded 0. We also include the employee's sex (women are coded 1) and race (racial minorities are coded 1); our impressions of sex and race dynamics from the interviews and the quantitative findings are discussed in the results section.

Sample

The three plants we studied had a total of twenty-four teams. Every employee at every level in these plants belonged to a team. Members belonged to teams comprised of others in their functional area but in a mix of occupations: there were manufacturing teams (which include pre-production, operations, and quality assurance), crafts teams (which include maintenance, electrical, and other trades), technical teams (which include technicians and engineers), and administrative teams (which include managers, secretaries, and financial staff. From the overall population of twenty four teams, we excluded seven teams because the team leader had not yet created, announced, or explained the employees' pay-for-skills plan, a precursor to studying course-taking; these seven teams included a small top management team that used a different incentive system and six production teams experiencing scheduling pressures. We surveyed all employees in the remaining teams in these three plants, rather than sampling randomly, so that we would have responses from as many members of a team as possible in order to characterize teams.

Data Collection

We administered the survey in one-hour sit-down sessions during work time, on all three shifts, for groups of one to three teams at a time. Providing paid time during the shift to take the survey probably boosted the response rate. We sent surveys and reminder notices to employees who did not attend the sit-down sessions and received some surveys individually. We learned of approximately ten employees who had recently retired or were on medical leave; they are among the non-respondents. We also learned that there was some illiteracy among employees; surveys that were returned to us blank were counted among the non-respondents. The final response rate is reported below.

Response Rate

There were 254 employees on seventeen teams. The response rate to the survey was 79.5% (202 employees). We excluded from the analyses the eleven team leaders who responded, because this paper focuses on bottom-up trust and their unique position gives their responses different meanings. The final sample size was 191.

We decided only to include teams where at least two-thirds (66%) of employees responded. We were interested in the team context, which is best represented by having a large proportion of respondents. A 100% response rate in a manufacturing setting is unrealistic; indeed, 66% is quite good. All seventeen teams met this criterion. The employees' responses were used to sort the sample into two types of teams: 101 employees were on one of the 9 more traditional teams and 90 employees were on one of the 8 more transformed teams. The response rate on the former was 82% and on the latter 74%. Tables 1A and 1B show summary statistics and correlation matrices for the more traditional and more transformed groups separately as well as for the full, merged sample.

Data Analysis

We perform logistic regression analyses to estimate employees' likelihood of taking a course, using the STATA statistical package. Because analyses are conducted on individuals who are members of teams, we control for intercorrelation within teams by using STATA's Huber

correction for standard errors (Huber 1967). We run the model separately with the less and more transformed teams, as well as with the merged sample, to discern whether patterns appear in the subgroup analyses that might have been submerged in the full sample. This approach allows us to distinguish the different roles of calculative and relational trust empirically.

Results

Overall Pattern

Table 2 shows the results of the logistic regressions on course-taking. The findings in this study are striking because of the asymmetric pattern of results for the more traditional versus the more transformed groups. Calculative trust is significant for traditional but not for transformed teams. Relational trust shows the converse pattern. Social influence is significant for both.

We recognize, of course, that we must proceed with reserve and not conclude too much from each non-significant coefficient, but the pattern of results taken as a whole is suggestive and can advance further theory generation and testing. The results for the merged sample show that four of the variables of theoretical interest – individual probability assessment and three of the four aspects of relational trust – are not significant in the full sample. The efficacy of splitting the sample into subgroups is supported. Theories of trust should incorporate the importance of the social setting in which the trust dynamics operate.

Calculative Trust

As posited in Hypothesis 1, a greater individual probability assessment increases the likelihood of taking a course on more traditional teams. Also as posited, this measure of trust is not significant for employees on more transformed teams. Members of more transformed teams have high individual probability assessments; that is, they believe that if they take courses their new skills will be certified by the team leader. However, this assessment is not the determinate mechanism for understanding which employees do or do not take course on more transformed teams. We are interested in these differences in relationships among variables, not simply differences in mean levels of variables between the types of teams.

It is not surprising that there is a high level of calculative trust on the more transformed teams. This finding does not undermine the finding that relational trust is important in more transformed teams. Mansbridge (1990) has argued that a kernel of self-interest can be consistent with, and even preserving of, the more relational and what she calls "altruistic" style of trust. In our findings, a higher average level of certainty has been achieved by members of more transformed teams, but it is no longer what differentiates course-takers from non-course-takers.

Interestingly, calculative trust does not explain the entire picture as proponents of this somewhat more utilitarian notion of behavior might expect. Calculative trust is less important in the more transformed settings, as people who do not stand obviously to gain nonetheless take courses. Of course, some people with low probability assessments take courses even on traditional teams. For example, one woman explained to us that she wanted to take the math courses being offered, even though it was not really part of her skills advancement plan, so that she could help her grandchild with her homework. Our qualitative data helps us understand such outliers to the quantitative model. Interestingly, in traditional settings, even the idiosyncratic reasons are individualistic. On the transformed teams, even those who did not see how course-taking would benefit them were interested in keeping abreast with their peers. Thus, calculative trust does not significantly differentiate course-takers from non-course-takers in this setting.

Relational Trust

As expected, the four aspects of relational trust each increased the likelihood of taking a course for employees on more transformed teams. Relational trust is more difficult to capture operationally. While none of these measures alone fully conveys relational trust, together they convey the reciprocal relations in which an employee is enmeshed. It is compelling that they are significant collectively.

It is interesting that sufficient variation remains on partly transformed teams to explain the variance in course-taking. Not everyone on the more transformed teams has high relational trust nor takes courses. Some remain less trustful and abstain from course-taking. Certainly the ratcheting up of reflexive trust through team-based experiences, described earlier, is gradual and

different for each member.

Only trust in teammates' reliability was significant in both types of team setting, in opposite directions. The importance of teammates' reliability for course-takers on more transformed teams was supported by our interviews and observations. These teams have very little slack in their operations. Team members who left, through retirement or disability, were not replaced. Team members understood both the pressures to cut costs and the challenges of greater interdependence. Employees who trust their teammates' reliability are more likely to take courses, perhaps because they can see the synergistic benefits to improving their skills. However, employees who do not trust their teammates' reliability are less likely to take a course, perhaps realizing that a solo effort is not sufficient in a team setting. In contrast, employees on traditional teams are more likely to take courses when they do not trust their teammates' reliability. Our interviews suggest two reasons. Some may feel that a solo effort matters, in a context where interdependence is not yet the arbiter of experience. Some may simply like the excuse to get some time away from their regular duties in order to go take classes, particularly if they do not feel beholden to unreliable teammates.

Why some employees trust their teammates' reliability more than others remains an interesting question. Trust is a very personal matter. On occasions when we actually used the term in interviews, people expressed some discomfort and felt like we were asking them to rate their friends' characters in a way too close to home. Many employees told us that everyone was different when it comes to trust, which may be the simplest way to explain why variance in the perceived reliability of one's teammates persists in both settings and is consequential for outcomes.

Demographic and Occupational Controls

Several of the control variables are significant. Hourly employees are more likely to take courses on more traditional teams, while salaried employees are more likely to take courses on more transformed teams. This result surprised us. We expected the reverse: salaried employees would be more likely to join the course-taking effort early, even before transformation got underway, and to believe its promises, which some helped to promulgate. Hourly employees may find the release time from work to take a course more appealing, particularly because production

work is physically demanding and noisy. In the more transformed teams, the hourly employees may be more likely to remain abstainers from course-taking than the salaried employees; most of the cynicism about capitulating to management's latest teamwork fad came from hourly employees.

As expected, employees in the plant experiencing greater scheduling pressures are less likely to take courses in more traditional teams, but this effect goes away on more transformed teams. We observed that once a significant number of employees begin taking courses, course-taking comes to be viewed less as an extracurricular activity that interrupts the "real work" and more of an essential ingredient of team functioning.

We were very surprised to find that black employees were less likely to take courses on both types of teams. In our interviews, we often found that black employees expressed greater enthusiasm for course-taking. Many described how the new pay-for-skills plan had a logic that made it clear what they had to do to be promoted, which they expressed in terms like, "at last, I know what I have to do." They hoped they might be less vulnerable to supervisor favoritism under the newly outlined plan. However, the quantitative results show a different overall pattern. We probed the correlation of race with a number of other variables and found that race was significantly correlated with working on the night shift, from 11:00 p.m. to 7:00 a.m. Employees with shorter tenure tended to pull these less desirable shifts, and black employees generally had shorter tenure because of the plants' relatively more recent efforts to improve the diversity of their hiring. While efforts were made at the plants to allow employees on all shifts to take courses – such as paying overtime if night shift employees stayed on to take an 8:00 a.m. course – the employees on the night shift may have experienced some practical difficulties in scheduling their courses. All three plants had long-tenured employees, because of previous tenure-based layoffs, with an average age in their early forties. While few of these employees had young children, many of the black workers explained that they raced home at the end of the night shift to help get their grandchildren to school. Despite the perceived opportunities presented by pay-for-skills plans, black employees may have been less able to take courses because of shift schedules and their impact on their family obligations.

We were also surprised that women were less likely to take a course on more transformed teams. Many of the women we interviewed were in position lower in their respective ladders that left room for movement by following their pay-for-skills plans; indeed, some expressed that they would now have more opportunities for movement within the parameters of their individual skills plan than when the pathways ahead of them were filled by more senior employees, often men. Nonetheless, the overall pattern shows women less likely to take courses. This result may reflect the sense in some parts of the plant that the kinds of jobs within a team that have most of the hallmarks of transformation, such as multi-skilling and job rotation, are the production and trades jobs in which women are least represented. The gender effect may be picking up an occupational effect. Clearly, future work needs to continue to investigate these race and gender dynamics and their concomitants.

Discussion

If researchers were to enter a plant engaged in transformed work practices, they might conclude that trust is the glue of the system, forged by workers working together interdependently in new systems of job rotation and multi-skilling. But the question would remain of how this promised state of affairs arose. We address this paradox of transformation: that trust is required to facilitate transformation but is created only once transformation is underway. We crack this paradox by retaining two distinct notions of trust and examining their dynamics in two social settings with a lesser and greater degree of transformation.

The story in this paper is about the halting diffusion of a practice within a company. Our two team contexts are a proxy for early and later adopters. We recognize that we must be cautious in defining these two groups of teams as occupying two points on the same path, rather than traveling two paths (a distinction made in studies of developed and developing nations). Because we have spent two years in the plants, our observations bolster our designation of these teams as early versus late in the same transformation process. We realize that, in this narrative of the evolution of transformation, we infer longitudinal patterns while we have only cross-sectional data.

But we have cross-sectional data of a special type. Because we entered the company during a time of transformation, we were able to observe that training was a hallmark of lesser and greater transformation and include in our sample teams that appear to be different in this respect.

This story could be recast drawing on contagion models. Traditional contagion models tend to focus on three phases (Rogers 1983). First, an initial group is symptomatic, a group that warrants special attention because they explain the beginning of a process. For the purposes of our study, this is essentially the first group that decides to take courses, particularly on the more traditional, less transformed teams. Second, there is a rapid contagion process, with an ever-increasing chance of contact with symptomatic individuals. We do not focus on this stage where course-taking breeds more course-taking, because this is not a longitudinal study, although we do examine the importance of the proportion of others on the team who have taken courses along with the frequency of contact with them. Third, there is a tapering off of the process, leaving a group which is not contagious or is slow to be symptomatic. In this discussion, we focus not just on explaining who takes courses, but considering the parallel problem of who does not.

At the more advanced stages of the transformation process, the absence of relational trust may explain why employees who do not participate in teams withhold their involvement at this point. But their low level of relational trust becomes increasingly difficult to understand in our story of “bootstrapping” (Sabel 1992) into a state of dense relational trust. Because successful teamwork and job rotation requires the contribution of all employees, especially under conditions of little slack, it is important to understand the residual mistrust of the last employees to join the effort. Employees who hold out and resist course-taking become of special interest. We feel it is important to understand this residual resistance. Similarly, institutional theorists who have been interested in the central tendency of organizations to mimic others with similar practices are becoming more interested in those organizations that break the pattern of diffusion and do not copy predominant practices (e.g., DiMaggio 1988).

Unanswered questions remain about when and for what reasons this last resistant group of employees may eventually take a course. For people low in their trust of others and least likely to

take courses, social group pressure may intensify or their jobs may come to hinge upon taking a course. Alternatively, when these people retire or leave, they may be replaced by enthusiastic people hired by the team, as part of self-management, enabling a full level of participation.

We have argued that trust can have two faces and they play different roles contingent upon social context. Nonetheless, if transformation succeeds, it may be difficult to attribute the success to a triumph of trust. Trust on its own cannot create a transformed workplace. It is not the driver of change, but a feature of change that is endogenously reinforced and contributes to the sustainability of transformation. The greater willingness of employees on already partly transformed teams to take courses based on greater relational trust holds some promise that teams can continue to transform endogenously as the teamwork and trust process proceeds. This role of trust is a crucial mechanism.

At the same time, trust may be a social force whose role is most compelling when it is absent or weak. Other social concepts, like legitimacy, also have this feature. When present, it is difficult to capture the extent to which they are the glue of the system. When absent, it is easier to see their deterioration as a source of crisis. If teams require the contribution of effort and skill from all members – not just most members – in order to succeed, then the mistrust that prevents the last group of employees from engaging in course-taking is a very important issue for understanding sustainability. Many team members we interviewed had stories about having to carry reluctant others who would not participate in transformed practices. Sometimes they generously attributed this reluctance to being close to retirement or burned out by the job, but sometimes they saw it as a cynicism that was even greater than warranted or fashionable, even on the plant floor. They debated whether these people could be worked around or were crucial to the effort. It would be ironic indeed if the final paradox of trust is that trust cannot guarantee the success of transformation, but that a nagging, persistent mistrust could provoke its failure.

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Table 1
Descriptive Statistics

Descriptive Statistics for More Traditional and More Transformed Teams

Variables	More Traditional N = 101		More Transformed N = 90		1	2	3	4	5	6	7	8	9	10
	Mean	S.D.	Mean	S.D.										
1 . Individual prob. ass.	54	27	72**	26		0.26	0.16	0.2	0.04	-0.13	-0.21	-0.04	-0.09	-0.02
2 . Trust leader	2.6	1.8	3.8**	2	0.16		0.33	0.38	0.18	0.11	-0.09	-0.06	0.18	0.22
3 . Shared D.M.	4.2	2.8	5.2*	2.6	0.01	0.31		0.33	0.15	0.04	0.06	0.33	0.10	-0.02
4 . Trust teammates	4.6	2	5	1.8	-0.01	0.28	0.19		0.08	-0.06	0.00	-0.01	-0.07	0.02
5 . Personal comm.	5.6	1.6	6*	1.4	0.27	0.14	-0.10	0.10		0.10	0.06	0.03	-0.01	0.04
6 . Social influence	0.92	2.73	1	4	0.13	0.06	0.09	-0.02	0.20		0.14	0.39	0.16	0.08
7 . Position	0.81	0.40	0.84	0.37	-0.06	-0.10	-0.09	-0.07	-0.04	-0.57		0.26	0.17	0.07
8 . Plant	0.06	0.24	0.48**	0.50	0.16	-0.17	-0.04	-0.07	0.02	0.10	0.14		-0.04	0.00
9 . Sex	0.19	0.39	0.24	0.43	0.04	0.00	-0.14	-0.06	0.15	0.04	-0.08	0.20		0.16
10 . Race	0.20	0.41	0.25	0.44	0.05	0.17	0.06	0.12	-0.03	0.04	0.03	0.25	0.33	

Note: Lower diagonal matrix shows correlations for more traditional; Upper diagonal matrix shows correlations for more transformed.

** Means for this variable are significantly different for the two groups of teams, $p < .01$.

* Means for this variable are significantly different for the two groups of teams, $p < .05$.

Descriptive Statistics for Merged Sample (N = 191)

Variables	Mean	S.D.	1	2	3	4	5	6	7	8	9
1 . Individual prob. ass.	62.2	28.1									
2 . Trust leader	3.16	2	0.28								
3 . Shared D.M.	4.68	2.77	0.18	0.36							
4 . Trust teammates	4.76	1.87	0.11	0.34	0.27						
5 . Personal comm.	5.82	1.5	0.18	0.18	0.04	0.10					
6 . Social influence	0.96	3.37	0.01	0.10	0.07	-0.04	0.14				
7 . Position	0.82	0.38	-0.10	-0.08	-0.01	-0.03	0.01	-0.17			
8 . Plant	0.26	0.44	0.21	0.07	0.26	0.03	0.06	0.29	0.20		
9 . Sex	0.21	0.41	0.00	0.10	-0.02	-0.06	0.07	0.12	0.05	0.05	
10 . Race	0.23	0.42	0.05	0.21	0.04	0.08	0.02	0.07	0.05	0.10	0.24

TABLE 2
Results of Maximum Likelihood Logistic Regression Analyses

Variables	More traditional teams(a)		More transformed teams(a)		Merged sample	
	b	s.e.	b	s.e.	b	s.e.
<i>Calculative Trust</i>						
Individual probability ass.	0.035 *	0.017	0.007	0.018	0.018	0.011
<i>Relational Trust</i>						
Trust team leader	-0.107	0.119	0.644 **	0.234	0.21	0.133
Shared decision making	-0.009	0.184	0.439 ***	0.113	0.069	0.111
Trust teammates	-0.535 *	0.241	0.695 *	0.278	-0.239	0.184
Personal commitment	0.241	0.266	0.477 *	0.222	0.324 *	0.148
<i>Group Context</i>						
Social Influence	0.731 ***	0.182	1.13 ***	0.321	0.398 ***	0.076
<i>Control Variables</i>						
Position	1.08 *	0.503	-6.44 ***	1.43	-1.04 *	0.494
Plant	-2.63 **	0.804	1.15	0.955	0.877 *	0.42
Sex	0.223	0.812	-3.63 ***	1.02	-1.17 +	0.629
Race	0.934 +	0.528	3.61 +	1.97	1.21 +	0.624
Constant	-2.36	1.84	-5.02 +	2.87	-2.05	1.24
Log Likelihood	-27.59		-15.39		-57.85	
Improvement in Chi2	38.28		49.04		64.27	
Prob. > Chi2	0.00		0.00		0.00	
N	68		67		135	

Note: (a) Teams were divided according to members' responses to meeting frequency, chart examination, raising touchy issue, and job rotation.

- + p < 0.1
- * p < .05
- ** p < .01
- *** p < .001

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